

FOUR SEASONS HOTEL, SYDNEY

CHILLER AND COOLING TOWER REPLACEMENT

Background

As part of AGL Energy's ongoing relationship with Four Seasons Hotel and the hotel owners Eureka Funds Management, AGL Carbon Management Services undertook an energy audit at the site in late 2007. The audit report identified a number of energy savings measures, including the replacement of one of the site's aging chillers. Additionally, the site's cooling tower was at the end of its economical life and thereby in need of replacement.

Project Scope

AGL Carbon Management Services were engaged to design and manage the project to:

- » Replace one of the site's three older chillers and a high efficiency water-cooled 980 kW PowerPax model.
- » Replace the site's old 3-cell wooden cooling tower with two new fibreglass towers (4,136 kWh). This included the construction of new structural supports and walkways and the replacement of all outdoor condenser water pipe work (some 300 mm diameter).

The Hotel chillers are located in the level 35 plant area. Works were therefore planned around having all demolished and new equipment transported via the goods lift in manageable sizes. In addition, all components then needed to be hoisted via a hatch between levels 34 and 35. Notably, the works were undertaken with only 4 hours scheduled air conditioning down-time. This occurred during the main condenser water pipe change-over.

Comments

The Hotel now has a vastly more modern chiller and cooling tower system. The installation has worked flawlessly since completion.

Energy savings from the first 12 months of operation are 721,559 kWh, which equates to a cost saving of \$79,313. These savings are significant, however they only represent 81% of the expected savings. Further investigations have identified that ineffective chiller staging, due to an aging BMS system, and issues with some AHU's control values, are preventing savings reaching their full potential. The Hotel is currently considering a BMS project that will address these issues.

The project has also delivered significant maintenance savings, and selected components from the decommissioned chiller are being used as spare parts for the site's remaining chillers of same type.



Achieved Savings and Payback Overview

Overall project cost:	\$808,142.00
Achieved electricity savings:	721,559 kWh/year
Electricity emissions savings:	772 Ton CO ₂ -e/year
Saving of base building lighting:	~ 14%
Electricity cost saving:	\$79,313.00/year
Simple payback, overall project:	10.2 Year
Simple payback, chiller replacement component:	5.4 Year

Note:

- » All \$ figures exclude GST.
- » Savings are based on a 12 months Monitoring and Verification programme by AGL, which included ongoing data logging, development of benchmarks and detailed analysis.

Site:

Four Seasons Hotel
199 George Street, Sydney

Works Completed:

March 2009

Client:

Eureka Funds Management

Design and Project Management:

AGL Carbon Management Services

Mechanical Contractor:

Inter-Chillers Pty Ltd

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